CLAIMS

What is claimed is:

1. A method of ameliorating symptoms of a herpes simplex virus associated disease in an animal infected with a herpes simplex virus, said method comprising administering to said animal at least one immunogenic protein from said virus, wherein said protein induces a T Helper Cell type 1 (Th1) response.

2. The method of claim 1, wherein said Th1 response comprises one or more of the following responses:

a. an increased ratio of virus specific immunoglobulin subclasses reflective of a preferential Th1 response;

b. an increased virus specific interferon γ/interleukin-10 (IFNγ/IL-10) ratio;

c. increased CD8+ Cytotoxic T Lymphocyte (CTL) levels; and

d. increased Interleukin 12 (IL-12) levels.

3. The method of claim 2, wherein said increased ratio of virus specific immunoglobulin subclasses is selected from the group consisting of IgG2a/IgG1, IgG1/IgG4, IgG2/IgG4, IgG3/IgG4, (IgG1 + IgG2 + IgG3)/IgG4, (IgG1 + IgG2 + IgG3)/IgG5, IgG1/IgE, IgG2/IgE and IgG3/IgE.

4. The method of claim 1, wherein said at least one immunogenic protein when administered to a mouse induces a Th1 response comprising an increased ratio of IgG2a/IgG1.

5. The method of claim 2, wherein the Th1 response comprises an increased ratio of virus specific immunoglobulin subclasses reflective of a preferential Th1 response, an increased viral specific interferon γ/interleukin-10 (IFNγ/IL-10) ratio, increased CD8+ CTL levels, and increased IL-12 levels, by at least 25% each.

6. The method of claim 2, wherein said method results in an increase of the response comprising an increased ratio of virus specific immunoglobulin subclasses reflective of a preferential Th1 response by at least 25%.

7. The method of claim 2, wherein said method results in an increased viral specific interferon γ/interleukin-10 (IFNγ/IL-10) ratio, by at least 25%.

8. The method of claim 2, wherein said method results in increased CD8+ CTL levels, by at least 25%.

9. The method of claim 2, wherein said method results in increased IL-12 levels, by at least 25%.

10. The method of claim 2, wherein said animal is a human.

11. The method of claim 10, wherein said herpes simplex virus is a herpes simplex virus-2.

12. The method of claim 10, wherein said herpes simplex virus is a herpes simplex virus-1.

13. The method of claim 11, which comprises administering a composition comprising multiple herpes simplex virus-2 proteins in a pharmaceutically acceptable carrier, but not the ICP10PK protein.

14. The method of claim 10, which comprises administration of a virus which comprises the at least one immunogenic protein or which expresses the at least one immunogenic protein following administration.

15. The method of claim 14 which comprises administering a herpes simplex virus-2.

16. The method of claim 15 which comprises administering the ICP10ΔPK mutant of herpes simplex virus-2.

17. The method of claim 1, wherein the at least one immunogenic protein is administered indirectly by administering nucleic acids encoding the at least one immunogenic protein.

18. The method of claim 17, wherein said animal is a human.

19. The method of claim 18, wherein said viral disease is herpes and wherein said nucleic acid does not encode ICP10PK.

20. The method of claim 5, wherein said animal is a human.

21. The method of claim 20, wherein said herpes simplex virus is a herpes simplex virus-2.

22. The method of claim 20, wherein said herpes simplex virus is a herpes simplex virus-1.

23. The method of claim 20, which comprises administration of a virus which comprises the at least one immunogenic protein or which expresses the at least one immunogenic protein following administration.

24. The method of claim 21, which comprises administering a composition comprising multiple herpes simplex virus-2 proteins in a pharmaceutically acceptable carrier, but not the ICP10PK protein.

25. The method of claim 21, which comprises administering the ICP10ΔPK mutant of herpes simplex virus-2.

26. The method of claim 5, wherein the at least one immunogenic protein is administered indirectly by administering nucleic acids encoding the at least one immunogenic protein.

27. The method of claim 26, wherein said animal is a human.

28. The method of claim 27, wherein said viral disease is herpes and wherein said nucleic acid does not encode ICP10PK.

29. A therapeutic vaccine for ameliorating symptoms of a herpes simplex virus associated disease in an animal infected with a herpes simplex virus, said therapeutic vaccine comprising at least one immunogenic protein from the virus, which following administration to the animal induces a response comprising an increased ratio of virus specific immunoglobulin subclasses reflective of a preferential Th1 response, an increased viral specific interferon γ/interleukin-10 (IFNγ/IL-10) ratio, increased CD8+ CTL levels, and increased IL-12 levels.

30. The therapeutic vaccine of claim 29, wherein said herpes simplex virus is herpes simplex virus-2 and said at least one immunogenic protein from a herpes simplex virus is from a herpes simplex virus-2.

31. The therapeutic vaccine of claim 30, which comprises a herpes simplex virus-2 mutant.

32. The therapeutic vaccine of claim 31, wherein said mutant encodes a mutant ICP10 protein which lacks protein kinase activity.

33. The therapeutic vaccine of claim 29, said vaccine further comprising an immune stimulant or adjuvant.

34. The therapeutic vaccine of claim 29, wherein said herpes simplex virus is herpes simplex virus-1 and said at least one immunogenic protein from a herpes simplex virus is from a herpes simplex virus-1.

35. The therapeutic vaccine of claim 34, which comprises a herpes simplex virus-1 mutant.

36. A method of identifying an agent which ameliorates a herpes simplex virus associated disease in an animal infected with herpes simplex virus, said method comprising administering a test agent to an animal, analyzing the immune response thereto, and selecting a test agent that induces a Th1 response.

37. The method of claim 36, wherein said Th1 response comprises an increased ratio of virus specific immunoglobulin subclasses reflective of a preferential Th1 response, an increased viral specific interferon γ/interleukin-10 (IFNγ/IL-10) ratio, increased CD8+ CTL levels, and increased IL-12 levels.

38. The method of claim 37, wherein said test agent is selected from the group consisting of a virus, a mutant virus, DNA, a polynucleotide, a protein, a peptide, and mixtures thereof.